[0070] CLAIMS

What is claimed is:

1. An apparatus comprising:

means for encrypting a data stream with an arbitrary block size to form a plurality of encryption units; and

means for packetizing the plurality of encryption units into a plurality RTP packets each including:

an RTP packet header;

one or more payloads of a common data stream and selected from the group consisting of:

one or more said encryption units;

fragment of one said encryption unit; and

one RTP payload format header for each said payload and including, for the corresponding encryption units, a boundary for the arbitrary block size.

2. The apparatus as defined in Claim 1, further comprising:

means for reassembling the plurality of encryption units using:

the payloads in the plurality RTP packets; and

the respective boundary for the arbitrary block size in the respective RTP payload format header;

means for decrypting the plurality of encryption units to form the data stream.

3. The apparatus as defined in Claim 2, wherein:

each said RTP payload format header further comprises one or more attributes of the corresponding payload; and

the apparatus further comprises means for rendering the formed data stream using the attributes of the corresponding payload.

4. The apparatus as defined in Claim 2, wherein the attributes in each said RTP payload format header are selected from the group consisting of:

timing information; and

video compression frame information.

5. The apparatus as defined in Claim 2, further comprising means for transmitting the plurality of RTP packets over a network.

6. An apparatus comprising:

means for logically separating media data type in a data stream including a plurality of said media data types; and

means for forming a plurality of RTP packets from the data stream, each said RTP packet including:

only one said media data type;

an RTP packet header;

one of more variable length RTP payload format headers each having one or more attributes; and

an RTP payload corresponding to each said RTP payload format header and being described by the one or more attributes therein.

7. The apparatus as defined in Claim 6, further comprising:

means for extracting the payloads from the plurality of RTP packets; and

means for rendering each payload in the plurality of RTP packets using the one or more attributes in the corresponding RTP payload format header.

8. The apparatus as defined in Claim 7, wherein:

each said payload comprises video data; and

the attributes in each said RTP payload format header are selected from the group consisting of:

timing information; and

video compression frame information.

9. The apparatus as defined in Claim 7, wherein the means for extracting further comprises, for each said RTP payload:

means, where the RTP payload includes a plurality of portions of one of the media data types, for assembling the plurality of portions of one of the media data types into a contiguous payload;

means, where the RTP payload includes one portion of one of the media data types, for assembling the one portion of one of the media data types into a contiguous payload; and

means, where the RTP payload includes a fragment of one portion of one of the media data types, for assembling all of the fragments of the one portion of one of the media data types into a contiguous payload.

10. The apparatus as defined in Claim 9, further comprising:

means for assembling, in respective chronological order corresponding to the plurality of media data types of the media file, the contiguous payloads; and

means for simultaneously rendering the chronologically ordered contiguous payloads of the plurality of media data types of the media file.

11. A data structure having a wire format for transmission over a network, the data structure comprising a plurality of single media packets formed from a plurality of mixed media packets, wherein:

each mixed media packet includes:

a payload for each of a plurality of data streams, wherein the payload is encrypted and has an arbitrary block size; and

a payload header for each payload and including a boundary for the arbitrary block size;

each single media packet includes one data stream, corresponds to one of the mixed media packets, and includes:

one payload corresponding to one of the payloads in the one mixed media packet;

a payload profile format header corresponding to:

the one payload; and

one of more payload headers of the one mixed media packet, wherein the payload profile format header has a boundary corresponding to:

the respective boundaries of the one of more payload headers of the one mixed media packet; and

the one payload.

12. The data structure of claim 11, wherein each single media packet further comprises:

a packet header corresponding to one or more packet headers of the plurality of mixed media packets;

a composition selected from the group consisting of:

a plurality of the payloads of the mixed media packets, being of like data stream, each having a corresponding said payload profile format header; and

one said payload and a corresponding said payload profile format header.

13. The data structure of claim 11, wherein each single media packet is less than a predetermined size that is a function selected from the group consisting of:

a physical characteristic of an underlying network;

an administrative policy with respect to packet size; and

an assessment of the transmission bandwidth of the underlying network.

14. The data structure of claim 11, wherein the payload boundary in the single media packet identifies the chronological order of the corresponding payload in the one mixed media packet.

15. The data structure of claim 11, wherein the one said data stream is selected from the group consisting audio data, video data, program data, JPEG Data, HTML data, and MIDI data.

16. The data structure of claim 11, wherein:

the payload profile format header includes a fixed length portion and a variable length portion; and

the variable length portion includes attributes of the corresponding payload.

17. The data structure of claim 11, wherein:

each said mixed media packet includes a portion of an ASF data stream, an ASF packet header, and at least one ASF payload header; and

each said single media packet includes, an RTP packet header, and one RTP payload format header; a portion of an RTP data stream.

18. A method comprising:

encrypting a data stream with an arbitrary block size to form a plurality of encryption units; and

packetizing the plurality of encryption units into a plurality RTP packets each including:

an RTP packet header;

one or more payloads of a common data stream and selected from the group consisting of:

one or more said encryption units; and

a fragment of one said encryption unit;

one RTP payload format header for each said payload and including, for the corresponding encryption units, a boundary for the arbitrary block size.

19. The method as defined in Claim 18, further comprising:

reassembling the plurality of encryption units using:

the payloads in the plurality RTP packets; and

the respective boundary for the arbitrary block size in the respective RTP payload format header;

decrypting the plurality of encryption units to form the data stream.

20. The method as defined in Claim 19, wherein:

each said RTP payload format header further comprises one or more attributes of the corresponding payload; and

the method further comprises rendering the formed data stream using the attributes of the corresponding payload.

21. The method as defined in Claim 19, wherein the attributes in each said RTP payload format header are selected from the group consisting of:

timing information; and

video compression frame information.

22. The method as defined in Claim 19, further comprising, prior to the reassembling, the plurality RTP packets over a network to a client at which the reassembling is preformed.

23. A computer readable medium comprising machine readable instructions that, when executed, perform the method of claim 18.

24. A method comprising forming a plurality of RTP packets from a data stream including a plurality of media data types, each said RTP packet including:

only one said media data type;

an RTP packet header;

one of more variable length RTP payload format headers each having one or more attributes; and

an RTP payload corresponding to each said RTP payload format header and being described by the one or more attributes therein.

25. The method as defined in Claim 24, further comprising:

extracting the payloads from the plurality of RTP packets; and

rendering each payload in the plurality of RTP packets using the one or more attributes in the corresponding RTP payload format header.

26. The method as defined in Claim 25, wherein the attributes in each said RTP payload format header are selected from the group consisting of:

timing information; and

video compression frame information.

27. The method as defined in Claim 25, wherein the extracting the payloads from the plurality of RTP packets further comprises, for each said RTP payload:

that includes a plurality of portions of one of the media data types, assembling the plurality of portions of one of the media data types into a contiguous payload;

that includes one portion of one of the media data types, assembling the one portion of one of the media data types into a contiguous payload; and

that includes a fragment of one portion of one of the media data types, assembling all of the fragments of the one portion of one of the media data types into a contiguous payload.

28. The method as defined in Claim 27, further comprising:

assembling, in respective chronological order corresponding to the plurality of media data types of the media file, the contiguous payloads; and

simultaneously rendering the chronologically ordered contiguous payloads of the plurality of media data types of the media file.

29. A computer readable medium comprising machine readable instructions that, when executed, perform the method of claim 25.

30. A method comprising changing a plurality of mixed media packets into a plurality of single media packets, wherein:

each mixed media packet includes:

a payload for each of a plurality of data streams, wherein the payload is encrypted and has an arbitrary block size;

a payload header for each payload and including a boundary for the arbitrary block size;

each single media packet includes one data stream, corresponds to one of the mixed media packets, and includes:

one payload corresponding to one of the payloads in the one mixed media packet;

a payload profile format header corresponding to:

the one payload; and

one of more payload headers of the one mixed media packet,

wherein the payload profile format header has a boundary corresponding to:

the respective boundaries of the one of more payload headers of the one mixed media packet; and

the one payload.

31. The method of claim 30, wherein each single media packet further comprises:

a packet header corresponding to one or more packet headers of the plurality of mixed media packets;

a composition selected from the group consisting of:

a plurality of the payloads of the mixed media packets, being of like data stream, each having a corresponding said payload profile format header; and

one said payload and a corresponding said payload profile format header.

32. The method of claim 30, wherein each single media packet is less than a predetermined size that is a function selected from the group consisting of:

a physical characteristic of an underlying network;

an administrative policy with respect to packet size; and

an assessment of the transmission bandwidth of a network.

33. The method of claim 30, wherein the payload boundary in the single media packet identifies the chronological order of the corresponding payload in the one mixed media packet.

34. The method of claim 30, wherein the one said data stream is selected from the group consisting audio data, video data, program data, JPEG Data, HTML data, and MIDI data.

35. The method of claim 30, wherein:

the payload profile format header includes a fixed length portion and a variable length portion; and

the variable length portion includes attributes of the corresponding payload.

36. The method of claim 30, wherein:

each said mixed media packet includes a portion of an ASF data stream, an ASF packet header, and at least one ASF payload header; and

each said single media packet includes, an RTP packet header, and one RTP payload format header; a portion of an RTP data stream.

37. A computer readable medium comprising machine readable instructions that, when executed, perform the method of claim 30.

38. A method comprising changing a plurality of mixed media packets into a plurality of single media packets, wherein:

each mixed media packet includes:

a payload for each of a plurality of data streams, wherein the payload is encrypted and has an arbitrary block size;

a packet header; and

a payload header for each payload and including a boundary for the arbitrary block size;

each single media packet corresponds to one of the mixed media packets and includes:

one payload corresponding to one of the payloads in the one mixed media packet;

a packet header corresponding to one of the packet headers of the one mixed media packet;

a payload profile format header corresponding to:

the one payload; and

one of more payload headers of the one mixed media packet;

wherein the payload profile format header has a payload boundary corresponding to:

the respective payload boundaries of the one of more payload headers of the one mixed media packet; and

the one payload.

39. The method of claim 38, wherein:

each said mixed media packet includes a portion of an ASF data stream, an ASF packet header, and at least one ASF payload header; and

each said single media packet includes, an RTP packet header, and one RTP payload format header; a portion of an RTP data stream.

40. The method of claim 38, wherein:

the payload profile format header includes a fixed length portion and a variable length portion; and

the variable length portion includes attributes of the corresponding payload.

41. A computer readable medium comprising machine readable instructions that, when executed, perform the method of claim 38.

42. A method comprising changing a plurality of single media packets into a composite packet, wherein:

each single media packet includes:

a payload of one data stream, wherein the payload is encrypted and has an arbitrary block size;

a payload header for the payload and including a boundary for the arbitrary block size;

the composite packet corresponds to the plurality of single media packets and includes:

one or more payloads of a like data stream and corresponding to the respective payloads of the plurality of single media packets; and

a payload profile format header for each said payload in the composite packet and corresponding to the payload headers of the plurality of single media packets, wherein the payload profile format header has a payload boundary for a respective said payload in the composite packet that identifies an order thereof in the plurality of single media packets.

43. The method of claim 42, wherein the composite packet further comprises:

a packet header corresponding to packet headers for each of the plurality of single media packets;

a composition selected from the group consisting of:

a plurality of said payloads each having a corresponding said payload profile format header; and

one said payload and a corresponding said payload profile format header.

44. The method of claim 42, wherein each single media packet is less than a predetermined size that is a function of selected from the group consisting of:

a physical characteristic of an underlying network;

an administrative policy with respect to packet size; and

an assessment of the transmission bandwidth of the underlying network.

45. The method of claim 42, wherein the data stream is selected from the group consisting audio data, video data, program data, JPEG Data, HTML data, and MIDI data.

46. The method of claim 42, wherein:

each said mixed media packet includes a portion of an ASF data stream, an ASF packet header, and at least one ASF payload header; and

each said single media packet includes, an RTP packet header, and one RTP payload format header; a portion of an RTP data stream.

47. The method of claim 42, wherein:

the payload profile format header includes a fixed length portion and a variable length portion; and

the variable length portion includes attributes of the corresponding payload.

48. A computer readable medium comprising machine readable instructions that, when executed, perform the method of claim 42.

49. A client computing device comprising a processor for executing logic configured to:

send a request for a media file including a plurality of media data types;

receive streaming media in a plurality of RTP packets corresponding to the media file and including:

only one said media data type;

an RTP packet header;

one of more RTP payload format headers each including an RTP payload boundary; and

an RTP payload for and corresponding to each said RTP payload format header, wherein the RTP payload is encrypted and has an arbitrary block size corresponding to the RTP payload boundary, each said RTP payload being selected from the group consisting of:

a plurality of portions of one of the media data types;

one portion of one of the media data types; and

a fragment of one portion of one of the media data types;

for each said RTP payload in the received RTP packets:

that includes a plurality of portions of one of the media data types, assemble the plurality of portions of one of the media data types into a contiguous payload using the RTP payload boundary of the corresponding RTP payload format header;

that includes one portion of one of the media data types, assemble the one portion of one of the media data types into a contiguous payload using the RTP payload boundary of the corresponding RTP payload format header; and

that includes a fragment of one portion of one of the media data types, assemble all of the fragments of the one portion of one of the media data types into a contiguous payload using each said RTP payload boundary of the corresponding RTP payload format headers;

assemble, in respective chronological order corresponding to the plurality of media data types of the media file, the contiguous payloads; and

simultaneously render the chronologically ordered contiguous payloads of the plurality of media data types of the media file.

50. The client computing device of claim 49, wherein the plurality of RTP packets are variable is size and less than a predetermined size that is a function selected from the group consisting of:

an assessment of the transmission bandwidth of an underlying network from which the plurality of RTP packets was received;

a physical characteristic of the underlying network; and

an administrative policy with respect to packet size.

51. The client computing device of claim 49, wherein each said RTP payload boundary identifies the chronological order of the corresponding RTP payload in the media data type of the media file.

52. The client computing device of claim 49, wherein each said media data type is selected from the group consisting audio data, video data, program data, JPEG Data, HTML data, and MIDI data.

53. The client computing device of claim 49, wherein:

each said RTP payload format header includes a fixed length portion and a variable length portion; and

the variable length portion includes attributes of the corresponding RTP payload.

54. A client computing device comprising a processor for executing logic configured to:

send a request for a media file including audio and video data;

receive a plurality of RTP packets corresponding to a plurality of ASF packets for the media file, wherein:

each said ASF packet includes:

an ASF packet header; and

one of more ASF payload headers each including an ASF payload boundary for a corresponding ASF payload, wherein the ASF payload is encrypted with an arbitrary block size corresponding to the ASF payload boundary;

the ASF payload for and corresponding to each said ASF payload header is selected from the group consisting of:

some of the audio data including an audio sample or fragment thereof; and

some of the video data including a video sample or fragment thereof;

each said RTP packet includes:

either some of the audio data or some of the video data;

an RTP packet header corresponding to at least one of the ASF packet headers;

one of more RTP payload format headers corresponding to at least one of the ASF payload headers, wherein each said RTP payload format header includes an RTP payload boundary corresponding to at least one of the ASF payload boundaries; and

an RTP payload for and corresponding to each said RTP payload format header, each said RTP payload being selected from the group consisting of:

a plurality of the ASF payloads;

one of the ASF payloads; and

a fragment of one of the ASF payloads;

for each said RTP payload in the received RTP packets:

that includes a plurality of the ASF payloads, assemble the plurality of the ASF payloads into a contiguous payload using the RTP payload boundary of the corresponding RTP payload format header;

that includes one of the ASF payloads, assemble the one said ASF payload into a contiguous payload using the RTP payload boundary of the corresponding RTP payload format header; and

that includes a fragment of one of the ASF payloads, assemble all of the fragments of the one of the ASF payloads into a contiguous payload using each said RTP payload boundary of the corresponding RTP payload format headers;

assemble, in respective chronological order corresponding to the audio and video data of the media file, the contiguous payloads; and

simultaneously render the chronologically ordered contiguous payloads of both the audio data of the media file and the video data of the media file.

55. The client computing device of claim 54, wherein the RTP packets are variable in size and less than a predetermined size that is a function of one selection from the group consisting of:

an assessment of the transmission bandwidth of an underlying network from which the plurality of RTP packets was received;

a physical characteristic of the underlying network;

an administrative policy with respect to packet size;

the size of the ASF packets that correspond to the received plurality of RTP packets; and

a combination of the foregoing.

56. The client computing device of claim 54, wherein each said ASF payload boundary identifies the respective chronological order of the corresponding ASF payload in one of:

the audio data in the media file; and

the video data in the media file.

57. The client computing device of claim 54, wherein each said RTP payload boundary identifies the respective chronological order of the corresponding RTP payload in one of:

the audio data in the media file; and

the video data in the media file.

58. The client computing device of claim 54, wherein each said RTP payload boundary identifies the respective chronological order of the corresponding RTP payload in one of:

a plurality of the ASF payloads; and

a fragment of one of the ASF payloads.

59. The client computing device of claim 54, wherein:

each said RTP payload format header includes a fixed length portion and a variable length portion; and

the variable length portion includes attributes of the corresponding RTP payload.